

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method by which more than one client program connected to a network stores the same data item at the same location or locations in a data repository connected to the network, the method comprising:

~~having a first client program~~ depositing a data item in a the data repository for a depositing client program, the depositing including

determining a digital fingerprint from the data item using a ~~reproducible pseudorandom process~~ hash function that produces digital fingerprints having a pseudorandom distribution;

~~storing the data item in the data repository at a physical location or locations associated with the digital fingerprint,~~

~~—having a second client program initiate a process for depositing a second data item in the data repository, the process including~~

~~—determining a digital fingerprint from the second data item using the reproducible pseudorandom process;~~

comparing the determined digital fingerprint from the ~~second~~ deposited data item to digital fingerprints ~~for~~ of data items already stored in the data repository, ~~and;~~

determining from the comparing of digital fingerprints, without comparing the entire contents of the ~~second~~ deposited data item to the entire contents of a data item already stored, whether a stored data item is identical to the ~~second deposited~~ data item ~~is already stored in the data repository;~~ and

storing the ~~second~~ deposited data item in the data repository if comparing establishes that ~~a data item identical to the second data item is not already stored in the data repository~~ there is no match, and not storing the ~~second~~ deposited data item in the data repository if comparing establishes that ~~a data item identical to the second data item is already stored in the data repository~~ a match is found;

associating the deposited data item with a named object, the associating including associating the deposited data item with an access authorization credential which is uniquely associated with the depositing client program or with a data repository user;  
associating the access authorization credential with the named object which comprises the determined fingerprint; and

storing the named object in a database;  
retrieving the stored data item, in response to a request by a retrieving client program,  
the retrieving including  
using the access authorization credential to select the stored named object;  
retrieving the stored named object from the database; and  
using the determined fingerprint from the retrieved named object to return the stored data item .];

~~wherein the reproducible pseudorandom process produces a digital fingerprint designed to probabilistically guarantee to provide a unique digital fingerprint for every distinct data item sent to the data repository;~~

wherein the physical location or locations at which the deposited data items ~~are~~ is stored in the data repository are determined at least in part by the determined digital fingerprints.

2-3. (Canceled)

4. (Currently Amended) The method of claim 154 wherein the encrypting of the deposited data item is performed by the depositing client program ~~prior to transmitting the deposited data item to the data repository.~~

5-6. (Canceled)

7. (Currently Amended) The method of claim 154 wherein a plurality of independent client programs each deposit the same deposited data item and the key derived from the content of the deposited data item is the same for each depositing ~~for all instances of the data item stored in the repository.~~

8. (Currently Amended) The method of claim 154 wherein users of the method are grouped into families, and the key derived from the content of the data item is the same for all ~~instances depositings of the deposited data item stored in the repository~~ by depositing client programs acting on behalf of users in the same family, but may be different for users in different families.

9. (Canceled)

10. (Currently Amended) The method of claim 1 further comprising associating the data item with each of a plurality of access-authorization credentials, each of which is uniquely associated with a ~~particular~~ distinct data repository user or client program.

11. (Canceled)

12. (Currently Amended) The method of claim 10 wherein the ~~associating of the data item with each of a plurality of access-authorization credentials comprises storing a plurality of named objects, each named object comprising is identified by~~ information representative of the data item paired with information representative of ~~one of the~~ access-authorization credentials.

13. (Canceled)

14. (Original) The method of claim 12 wherein the information representative of the access-authorization credential is a cryptographic hash of all or part of the access-authorization credential.

15. (Original) The method of claim 14 wherein the cryptographic hash is an access identifier that uniquely identifies the data item for a particular user or client program.

16-19. (Canceled)

20. (Currently Amended) The method of claim 12 wherein the stored named objects further comprises historical version information associating ~~different~~ data items deposited at different times with different ~~versions of the~~ named object versions.

21-25. (Canceled)

26. (Currently Amended) The method of claim ~~22~~ 1 wherein named objects history is ~~are~~ preserved by creating a new version of ~~each~~ the named object each time that a new data item is associated with it.

27. (Canceled)

28. (Currently Amended) The method of claim ~~27~~ 26, wherein ~~the~~ a determination of which versions of ~~a~~ the named object to delete is based in whole or in part on the times at which the versions were created, and the intervals between these times.

29. (Currently Amended) The method of claim ~~20~~ 1 further comprising preparing a digital time stamp hash for each of a plurality of named objects to allow a property of these named objects to be proven at a later date.

30. (Currently Amended) The method of claim 29 wherein a random or other difficult to guess element is incorporated into the digital time stamp hash for each of the plurality of named objects, to prevent the property from being proven if this element is deleted.

31. (Currently Amended) The method of claim 12 further comprising determining that a the stored data item ~~stored in the data repository~~ is ~~not no longer referenced by~~ associated with any named object, and reusing the storage space used ~~to store the unreferenced by the stored~~ data item.

32. (Canceled)

33. (Currently Amended) The method of claim 1 further comprising a challenge step to ascertain that a the depositing client program has the ~~full~~ entirety of the data item being deposited.

34-37. (Canceled)

38. (Currently Amended) The method of claim ~~37~~ 1 wherein there is a greater degree of user identification or a higher likelihood that user identification will be required when access to the data item being ~~stored by the~~ deposited for a depositor ~~user has been indicated to be shareable can be shared~~ with other users.

39. (Canceled)

40. (Currently Amended) The method of claim ~~38 or 39~~ 1 wherein identity information about ~~the a~~ depositor user associated with the deposit is made available to ~~anyone able to access the data item~~ retrieval client programs, to discourage unlawful sharing of proprietary information.

41. (Currently Amended) The method of claim 40 wherein the identity information is stored in an encrypted form that the depositor and users with whom the depositor has shared ~~subsequently~~ access to the ~~shared~~ data item can both read.

42. (Canceled)

43. (Currently Amended) The method of claim ~~37~~ 1 wherein the identity of ~~some a~~ depositor users associated with the deposit of the data item has not been ~~well~~ verified, ~~but and~~ restrictions are placed on sharing of the data items ~~deposited by such poorly verified users~~.

44. (Currently Amended) The method of claim 43 further comprising limiting ~~access to~~ the rate of retrieving data items deposited by a poorly verified user associated with the named object.

45-47. (Canceled)

48. (Currently Amended) The method of claim 1 wherein the deposit client program ~~using the repository runs on a client machine and~~ is a mirroring program which determines which data items to deposit in the data repository, and wherein that determination is based at least in part on the result of a comparison of digital fingerprints establishing that certain data items are not already stored in the data repository.

49-54. (Canceled)

55. (Currently Amended) The method of claim 54 wherein a lists plurality of fingerprints for data-items making up a composite data-item are deposited as an index data item, which can

be ~~given an~~ associated with a named object-name and used for obtaining access to any of the component data-items.

56-59. (Canceled)

60. (Currently Amended) The method of claim 15 wherein the data repository comprises the database and the physical locations at which~~information about the~~ named-objects is stored ~~is~~ are based on the access identifiers, to introduce reproducible pseudorandomness into the physical locations of the named-object ~~data~~.

61. (Canceled)

62-65. (Canceled)

66. (Currently Amended) The method of claim ~~65~~ 1 wherein access to named objects associated with at least some access-authorization credentials can be transferred between data repository users without ~~the use of communicating with~~ the data repository.

67. (Currently Amended) The method of claim ~~65~~ 1 wherein at least one class of data repository users is not permitted to transfer access to their named objects to other users using access-authorization credentials.

68-153. (Canceled)

154. (Currently Amended) The method of claim 1 wherein the depositing further comprises~~ing~~ encrypting the deposited data item using a key derived from the content of the deposited data item.

155-174. (Canceled)

175. (Previously Presented) The method of claim 1 in which different physical locations comprise different hard disk drives.

176-177. (Canceled)

178. (Currently Amended) The method of claim 1 wherein the physical locations comprise ~~physical storage nodes~~ data servers linked by a network.

179. (Currently Amended) The method of claim 1 wherein determining from the ~~digital fingerprint~~ comparing of digital fingerprints, without comparing the entire contents of the deposited data item to the entire contents of a data item already stored, whether a stored data item is identical to the second deposited data item ~~is already stored in the data repository~~ comprises transmitting over the network the digital fingerprint of the second deposited data item rather than the second deposited data item itself.

180-182. (Canceled)

183. (Currently Amended) The method of claim 1 wherein ~~at least the first~~ the depositing client program comprises a file server.

184. (Previously Presented) The method of claim 1 wherein files and directories are named objects within the data repository.

185. (Previously Presented) The method of claim 1 wherein a structured item is split up into a plurality of data items with the divisions occurring at content dependent boundaries.

186. (Canceled)



187. (Currently Amended) The method of claim 1 wherein a plurality of depositing clients programs each ~~of which has initiated a process to~~ independently deposit an identical the deposited data item and a corresponding plurality of retrieval client programs all share read access to ~~a single repository~~ the stored data-item.

188. (Currently Amended) The method of claim 187 wherein retrieval clients programs which ~~have not initiated a process for depositing the identical data item~~ do not possess an access authorization credential generated during deposit of the deposited data item cannot read the stored data item.

189. (Canceled)

190. (New) The method of claim 1 wherein the data repository comprises the database.

191. (New) The method of claim 1 wherein the depositing client program and the retrieving client program are the same program.

192. (New) The method of claim 1 wherein there exists a defined protocol used by data repository client programs to communicate with the data repository and the defined protocol allows data repository clients to deposit data items without storing them if they are already stored in the data repository and only allows data repository clients to retrieve data items indirectly, by using access authorization credentials to select named objects.